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ABSTRACT

The importance of soil, its use and suitability for agriculture and building construction, and the need for and value of soil surveys are emphasized in this pamphlet. It serves as the script for a set of color slides and filmstrip produced by the Soil Conservation Service, U.S. Department of Agriculture. Each of the 73 frames is illustrated with accompanying narration next to the picture. (BL)

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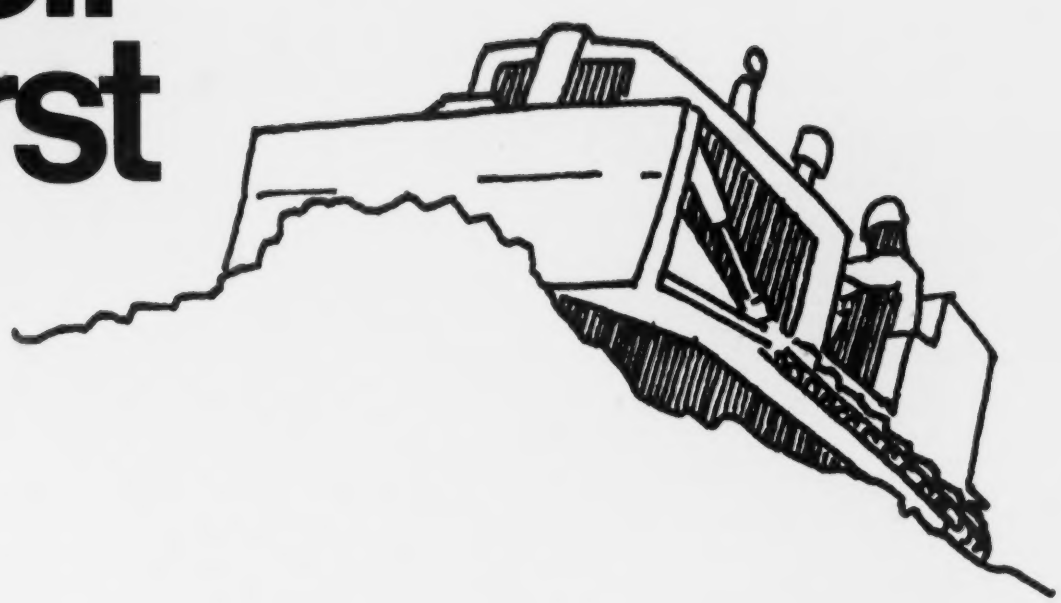
Narrative guide for color slide set and film strip C-183

consider the soil first



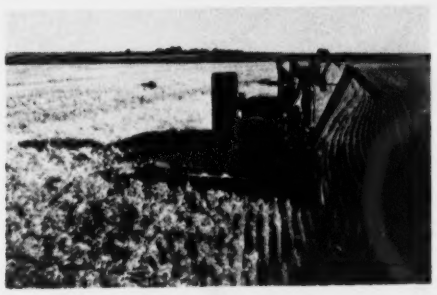
SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

November 1971

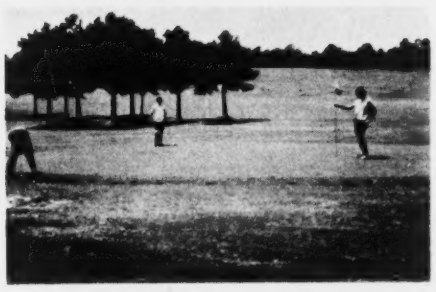
When projecting this presentation with a recording using audible "beeps," change to first frame on first "beep" and change frames on each "beep" thereafter.

1. This is soil. A mixture of mineral and organic matter, air, water and living things.

2. It supports our buildings.

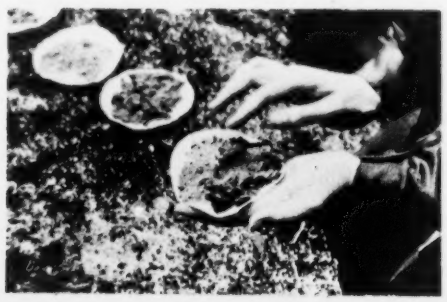


3. It grows our food.

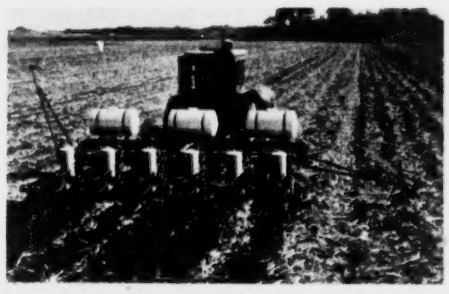


4. It gives us a place to play.

5. It is our most valued natural resource.



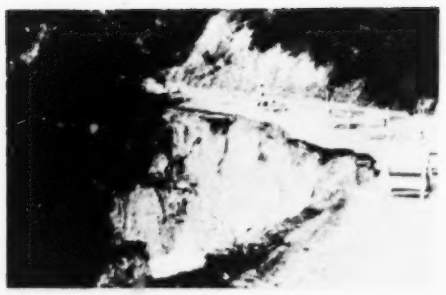
6. There are thousands of different soils in the United States.



7. Some are well suited for crop production.

8. While others erode too easily for cultivation of any kind.

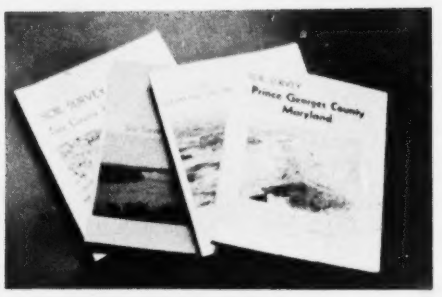
9. Some have good strength for supporting roads, houses and other structures.



10. While others break up under the weight.

11. For a quality environment, it's essential to know where each of these different kinds of soil is located and to know its potentials and limitations.

12. Whether you're planning to build a home, construct a road, plant a crop, or develop an entire new town -- CONSIDER THE SOIL FIRST.



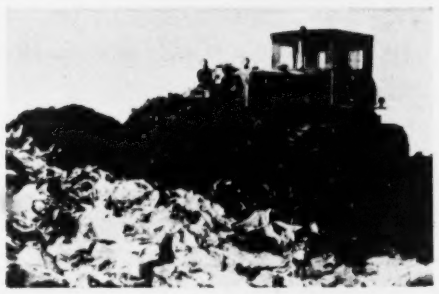
13. The place to find soils information is in a soil survey of the area.

14. The survey can help engineers and others evaluate the suitability of each soil for various uses and determine the need for additional studies.

15. For example, a soil map can identify land that has good properties for roads.

16. It can help you find good locations for private dwellings.

17. It can help developers locate suitable sites for parking lots and shopping centers.

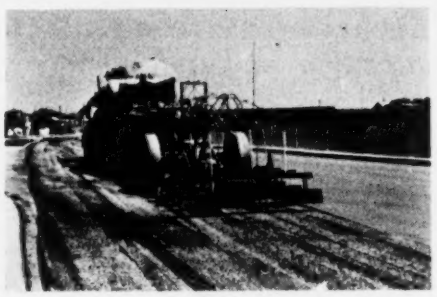


18. It can help planners find safe places for sanitary landfills.

19. It can help determine locations for lakes and other recreation areas.

20. The map also identifies soils that may mean trouble. For example, some soils with a high clay content shrink when dry and swell when wet -- as much as 20 percent in volume.

21. Buildings on these unstable soils shift and crack.



22. Asphalt roads undulate and need constant maintenance to keep them smooth and safe for automobile traffic.

23. Even concrete buckles under extreme pressure of soils that shrink and swell--like this slab of concrete along a modern superhighway.

24. Check the roof and balcony lines of these garden apartments. The structural damage is readily apparent. The buildings shouldn't have been built on such unstable soils without special foundation work. A soil map would have saved this developer a lot of headaches.

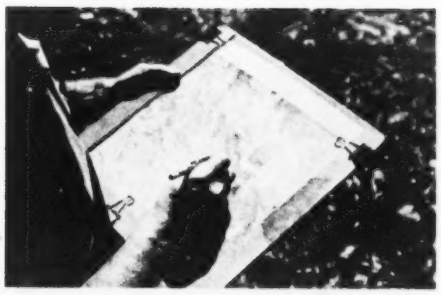
25. Soil maps are nothing new. The Department of Agriculture has been making soil surveys for more than 70 years. In making them, a soil scientist studies the land acre by acre, its vegetation, and its features.

26. He identifies the different kinds of soil by examining the soil layers, usually to a depth of five feet.

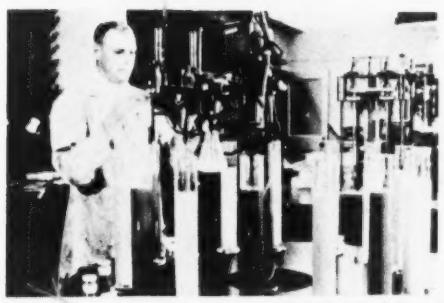
27. The soil profile, usually made up of two or three distinct layers, reveals much that the scientist needs to know about soil behavior.

28. He also determines the slope, possible erosion hazards, and depth to rock if it occurs within five feet of the surface.

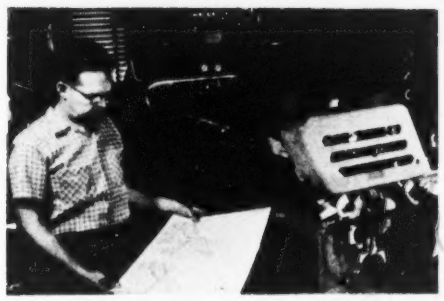
29. He determines the color, tests the acidity or alkalinity, estimates the proportions of sand, silt, clay and organic matter.



30. He classifies the soils according to a national system and outlines each kind of soil on an aerial map before he leaves the field.

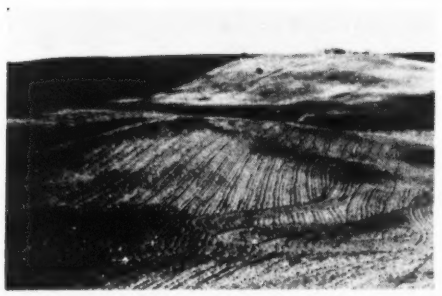


31. Samples of key soils are sent to the laboratory for classification.



32. The survey is published, usually on a county basis, by the Soil Conservation Service. The work is done by SCS in cooperation with state land grant universities, and, in many instances, other federal, state, and local agencies.

33. Soil surveys help to determine proper land use. With the basic soil map, a trained soil conservationist can help the farmer or rancher decide which fields can and cannot be planted to certain crops and what conservation measures are needed to protect the land.



34. For example, a smart farmer isn't going to plant row crops up and down hill on rolling land like this where the soil is sure to erode.

35. Instead, he'll establish the necessary conservation measures such as contouring and terracing which slow down water run-off, halt erosion, and increase water absorption.

36. He'll build grass waterways to carry excess water off his land safely.

37. On land not suited for cultivated crops, he may establish a pasture or woodland. The soil survey helps him make intelligent land-use decisions.

38. And the same basic soil information can help other land users, such as builders, contractors, engineers, land-use planners, and zoning officials. In other words, just about anyone who works with the land.

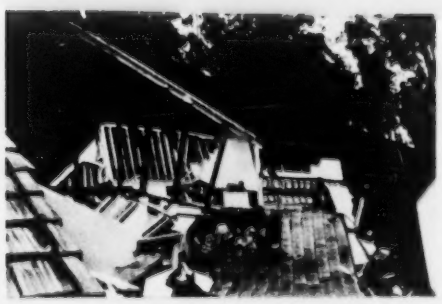
39. One serious environmental hazard is suburban erosion. The soil map shows erosion is most likely to occur.

40. Too often in suburban development, the surface vegetation is scalped and the soil left bare for long periods.

41. Everytime it rains, some of this soil washes away into streams and rivers, and fills lakes and ponds, resulting in sedimentation damage that is expensive to correct.

42. With hillside sites becoming more popular, builders should be particularly concerned about unstable sloping soils.

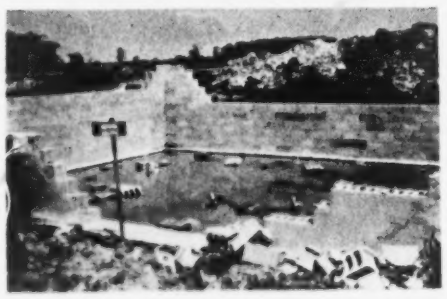
43. When saturated with water, these soils may slip downhill.



44. In some parts of the country, slipping soils have caused millions of dollars in property damage.

45. Wet soils are also a hazard. Those that cause serious trouble to unsuspecting home buyers are wet only part of the year.

46. After a heavy rain on this tight soil, water stands on the surface, septic tanks fail, basements flood, and, at times, foundations are damaged. These soils are shown in the soil survey and can be avoided. Or, at a price, corrective measures can be taken.



47. Land with high water tables also presents problems. On this site the water table moved up and down without reaching the surface. So the wetness wasn't apparent until the basement was dug and the foundation nearly completed.

48. The builder was forced to abandon the site at a considerable loss. The soil survey would have revealed this problem.

49. Rocky soils are also troublesome. And the rock usually isn't as obvious as this. Imagine digging a basement or installing a septic tank filter field in this soil!

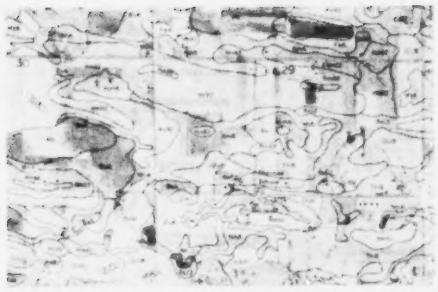
50. In addition, lawns and gardens are difficult to establish. Most important, the cost of excavating rock for foundations can be 10 to 20 times greater than that of excavating earth.

51. This high cost is the reason many counties and municipalities are using soil surveys to avoid such soils in routing water mains, storm sewers, and other underground utilities.

52. Another problem in some areas is soils that trigger an electrochemical process that results in rapid destruction of metal.

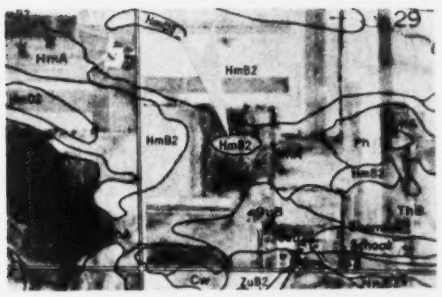
53. Metal pipes that would normally last 20 years can corrode in just a few years when buried in these unfavorable soils.

54. Since soils like these can't always be avoided, cities like San Antonio, Texas use soil maps to identify these problem areas so proper corrective measures can be taken.

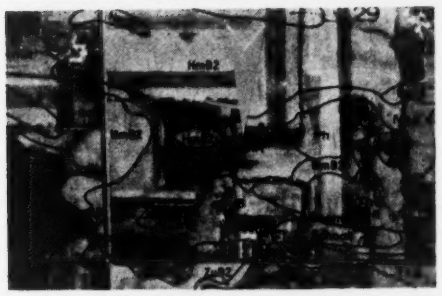


55. We've talked a lot about the soil map. Now let's take a close look at one. At first it seems pretty complicated. However, each of the symbols, printed over an aerial photo, stands for a specific kind of soil.

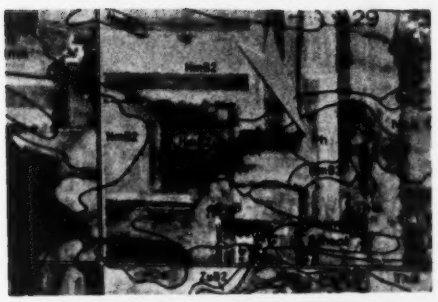
56. By checking these symbols against the tables in the survey, we can find a storehouse of information on soil behavior.



57. For example, that symbol, HmB2, identifies a soil with slight limitations for residential development, and septic tank filter fields installed in the area should function properly.



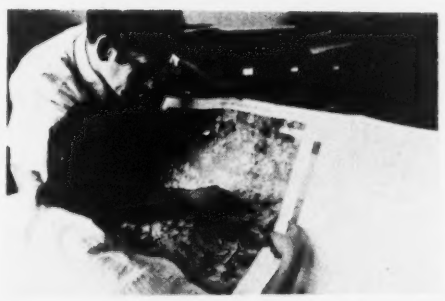
58. But move a short distance away to the next soil type and you could have trouble. This soil has a temporary high water table that will result in wet basements and septic tank failure during parts of the year.



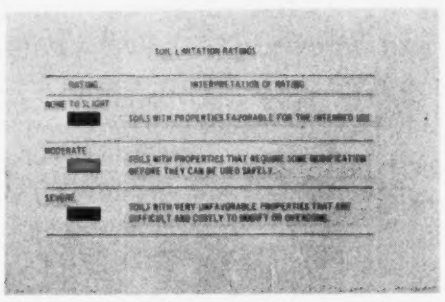
59. A little farther to the right and we run into soils that have severe limitations for homes because of a permanent high water table. Also, the shrink-swell capacity is so great that the land is ill suited for roads and commercial and industrial development.

60. Nevertheless, all three of these soil types are well suited for farming and are among the most productive in the area.

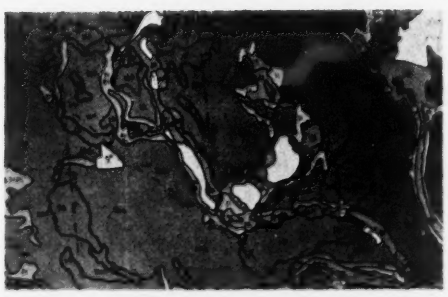
61. And most of them can safely be used for parks, golf courses, wildlife sanctuaries or plant nurseries. In other words, there is very little land that is completely useless.



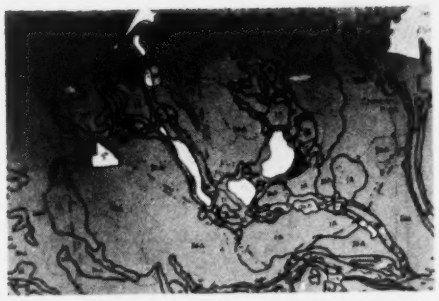
62. In many areas, special soil maps are available that show the suitability of land for some one particular purpose such as housing construction, onsite sewage disposal or agriculture. These maps are color coded to reflect slight, moderate, and severe limitations.


SOIL LIMITATION RATINGS
RATING
INTERPRETATION OF RATING
NONE TO SLIGHT
SOILS WITH PROPERTIES FAVORABLE FOR THE INTENDED USE
MODERATE
SOILS WITH PROPERTIES THAT REQUIRE SOME MODIFICATION BEFORE THEY CAN BE USED SAFELY.
SEVERE
SOILS WITH VERY UNFAVORABLE PROPERTIES THAT ARE DIFFICULT AND COSTLY TO MODIFY OR OVERCOME.

63. The colors usually used are green for go ahead, yellow for caution, and red for watch out -- there could be serious trouble ahead.

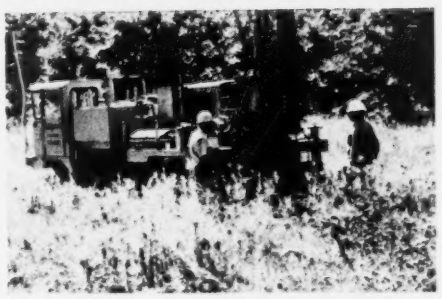


64. This map is color coded for homesites with septic tank filter fields. You could install a field without worry in any area colored green.



65. But if you wanted a lawn around the home, you'd have trouble. This is the same area, color coded this time for lawns, landscaping, and golf fairways. The sandy soil requires almost constant watering during dry periods. In addition, the course texture of the soil calls for frequent applications of fertilizer to feed grass and shrubs adequately.

66. The soil survey certainly isn't the answer to all land-use problems and was never intended to be. But a growing number of people -- individuals to multi-county planning groups -- are finding it an excellent place to start.



67. The soil survey does not replace the need for detailed foundation and site investigation by qualified engineers or geologists. Quite often, facts disclosed in the survey make further investigation a necessity.

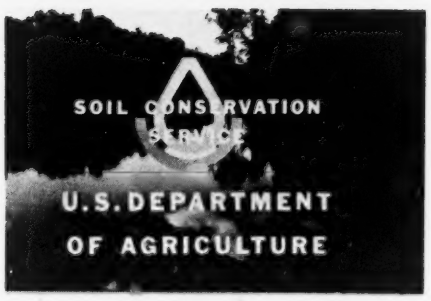
68. In many areas the soil maps provide the basis for zoning and subdivision regulations.

69. As a result, construction is confined to good sites, designs are prepared more economically, cost estimates are more accurate, and maintenance costs are lower.

70. Most important, distressing misuses of land can be avoided or minimized beforehand.

71. Soils information for a given area is usually available from the offices of the local soil and water conservation district, the Soil Conservation Service, the Extension Service, or the state land grant college.

72. Publications on many aspects of proper land-use also are available from the Soil Conservation Service.



73. For town and country planning, the soil survey is proving to be a most valuable tool in avoiding costly environmental problems.

Additional copies of this filmstrip can be purchased for $7.50 from Photo Lab, Inc., 3825 Georgia Ave., NW., Washington, D.C. 20011. Slide sets can be purchased from Photography Division, Office of Information, U.S. Department of Agriculture, Washington, D.C. 20250. A cassette recording of the narrative for automatic or manual projection is available from either source for $3.

$7.50/set